THIS IS ONE VOLUME OF A SIX VOLUME SET WHICH INCLUDES:

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EG&G ROCKY FLATS PLANT	**Manual:**	**5-21000-OPS**
EMD MANUAL OPERATION SOP	**Procedure No.:**	**SW.12, Rev. 2**
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	Effective Date:	**March 1, 1992**
Category 2	**Organization:**	**Environmental Management**

TITLE
SITE DESCRIPTION

Approved By: J Evered 5/12/92
(Name of Approver) (Date)

1.0 TABLE OF CONTENTS

2.0 PURPOSE AND SCOPE

This standard operating procedure (SOP) describes procedures to be used in site description of surface water and sediment data collection sites at the Rocky Flats Plant (RFP). Site description is being performed to obtain uniform identification and to provide background site descriptions for all surface water and sediment stations at the RFP.

Identification of these sites will be based on visual inspection of the sites and areas in the near vicinity of the sites In addition, certain dimensions of surface water bodies will be determined by measurement

All sampling stations, regardless of whether they are currently being sampled, will be described. The frequency of site description will be determined by EG&G personnel.

3.0 RESPONSIBILITIES AND QUALIFICATIONS

Personnel performing site descriptions will be geologists, hydrologists, engineers, or field technicians with an appropriate amount of applicable field experience or on-the-job training under supervision of another qualified person

4.0 REFERENCES

4.1 SOURCE REFERENCES

The following is a reference reviewed prior to the writing of this procedure

Davis, Richard A Depositional Systems, A Genetic Approach to Sedimentary Geology Prentice-Hall, Inc. Englewood Cliffs, New Jersey 07632 1983

4.2 INTERNAL REFERENCES

A related SOP cross-referenced by this SOP is

- SOP FO 10, Receiving, Labeling, and Handling Environmental Materials Containers

5.0 METHODS

5.1 EQUIPMENT

Equipment used in the collection of site description information will include but is not limited to the following:

- Steel tape measure
- Rock color chart
- Particle size and roundness chart
- Communications radio
- Site description forms
- Hand lens
- Boot covers and gloves
- Trash bags
- Clipboard
- Pen
- Camera (optional-EG&G may supply photographer and camera)

Check to be sure that each of these items is loaded into the field vehicle before proceeding to the sample sites

5.2 PROCEDURES

Proceed to the data collection site Carry a site description form, pen, clipboard, tape measure, and color and particle size charts

Fill in the date, crew members, contractor, and location on the site description form. Note the program area (from following list) and the operating unit, if known

- Background
- Perimeter Security Zone
- Walnut Creek
- Woman Creek
- Americium Zone
- Interceptor Ditch
- Landfill
- West Spray Field
- 881 Hillside
- Central Avenue
- Mound Area

Visually inspect the sample site in order to assess each condition listed on the site description form Record the information on the form

Using the steel tape, measure the dimensions of the water body and record the dimensions to the nearest foot Note any sample sites which may be appropriate for spring box installation Seeps and springs are suited for this purpose

5.2.1 Describing Sediments

Describe sediments (bed materials) in terms of lithology, particle size, color, textural maturity (sorting, roundness), staining, and presence of organic material The following descriptive aids should be used for this purpose

- Particle size and roundness chart
- Rock color chart

Textural maturity is a measure of the energy of the depositional environment which caused the deposition of sediments It is a function of clay content, sorting, and the angularity of sediment grains

Sorting is a measure of the spread of the distribution of particle sizes found in a sediment deposit For example, a sample of bed material which contains various amounts of clay, silt, sand, and cobbles would be considered a poorly sorted sediment because of the wide spread of particle sizes A homogeneous sand would be considered very well sorted

Sediment grains display varying degrees of roundness ranging from very angular to very well rounded This property can be assessed both visually and by touch Use the roundness chart provided to make objective comparisons to determine this property for sediments at each site.

5.2.2 Describing Surrounding Areas

Visually inspect soils in the area, noting the areal extent and color of the soils. If the thickness of soil layers is apparent, make a note of it Note the presence and lithology of any rock outcrops in the area Note the predominant particle size for sediment found in the area Use the hand lens to obtain visual lithological information. Do not, however, break up any rock material for this (or any other) purpose

Qualitative side slope conditions for streams should be described as well as the regional slope direction

Visually inspect the area for vegetation and describe the relative abundance and type of plants present, if known

5.2.3 Site Photographs

Site photographs will be taken at each site EG&G personnel will be responsible for providing a camera and for assigning a photographer to complete this task The photographs will accompany site description forms in the site description report

6.0 PERSONNEL DECONTAMINATION

Personnel performing site description activities will wear disposable gloves and boot covers. These items will be discarded in trash bags upon completion of activities at each site New gloves and boot covers will be required for each site Trash will be handled as potentially contaminated environmental solids in accordance with SOP FO.10, Receiving, Labeling, and Handling Environmental Materials Containers

Personnel will not wade into water bodies during the site description activities.

7.0 QUALITY ASSURANCE/QUALITY CONTROL

Quality assurance (QA) and quality control (QC) for site description at the RFP will consist of performing the descriptions twice, and verifying the correctness of entries on typewritten final versions of the site description forms

8.0 DOCUMENTATION

All information required by this SOP will be documented on the Site Description form found in this section The forms will be accompanied by location maps and photographs of each site

SURFACE WATER AND SEDIMENT SAMPLING SITES

Date _____ Field Crew _____ Contractor _____
SW Site _____ SED Site _____ Reviewed By _____
Northing _____ Easting _____ Photograph Number(s), bearing _____
Program Area _____ Operating Unit _____ Other _____
Weather Conditions _____

SURFACE WATER

Type of Water Body (ditch, pond, seep, stream, pipe, other) _____
Physical location (relationship to nearby tributaries) _____
Width of Water Body _____ Depth _____ Length _____
Water Clarity (clear, cloudy, tubid, other) _____ Discharge (Q, in cfs) _____
Velocity (flood stage, fast, moderate, slow, stagnant, dry) _____
Are flow rate and clarity seasonal or influenced by a storm event? _____
Appropriate for spring box installation? _____ Why? _____
Additional Comments _____

SEDIMENTS

Predominant Bed Materials Particle Size (clay, silt, sand, gravel, boulders) _____
Percentages of major minerals _____
Bed Material Color _____ Sorting _____ Roundness _____
Iron, Manganese or Other Staining _____
Amount of Organic Material in Sediments _____
Additional Comments _____

VEGETATION ASSOCIATED WITH SAMPLING SITE

Vegetation in Water, Sediments (abundant, moderate, sparse, none) _____
Algae Growth (abundant, moderate, sparse, none) _____
Cattails (abundant, moderate, sparse, none) _____
Other Aquatic Plants (type is known, or description) _____

SURROUNDING AREA/SETTING

Geologic Unit(s) _____
Soil Present (abundant, moderate, sparse) _____ Soil Color _____
Presence of Rock Outcrops, Boulders, Cobbles, Pebbles, Sand _____
Rock Type(s) _____ Rock color _____
Side Slope Conditions (steep, moderate, low, flat ground) _____
Direction of Slope _____
Surface Vegetation (abundant, moderate, sparse, none) _____
Type if known, or description _____
Other Comments _____

SAMPLING OF INCIDENTAL WATERS

EG&G ROCKY FLATS PLANT	**Manual:**	**5-21000-OPS**
EMD MANUAL OPERATION SOP	**Procedure No.:**	**SW.16, Rev. 2**
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Category 2	**Organization:**	**Environmental Management**

TITLE:
SAMPLING OF
INCIDENTAL WATERS

Approved By

(Name of Approver) (Date) 5/12/92

1.0 TABLE OF CONTENTS

2.0 PURPOSE AND SCOPE

This standard operating procedure (SOP) describes procedures that will be used at the Rocky Flats Plant (RFP) for the collection of water samples from incidental sources These would include waters collected as a result of (1) construction activities that require excavation below the groundwater table and subsequent dewatering, (2) collection and dewatering of precipitation and storm water runoff in excavations, pits, trenches, ditches, or depressions that do not intercept the groundwater table, and (3) water that collects in secondary containments, process waste valve vaults, electrical vaults, or manholes that require pumping as described in the "Procedure for the Control and Disposition of Incidental Waters" (EG&G, May, 1990)

This SOP describes personnel responsibilities and qualifications, sample collection and preservation procedures, and quality assurance/quality control and documentation requirements that will be used for field data collection to attain acceptable standards of accuracy, precision, comparability, representativeness, and completeness

The current RFP Health and Safety plan does not allow for sampling which requires entering confined spaces Thus, vaults, manholes, and other similar enclosures may only be sampled by remote methods Entry of these structures is not permitted. In addition, when sampling excavated areas, such as trenches, appropriate bracing and/or shoring of the excavation is required before entry will be permitted

3.0 RESPONSIBILITIES AND QUALIFICATIONS

Personnel sampling incidental waters will be geologists, hydrologists, engineers, or field technicians with an appropriate amount of applicable field experience or on-the-job training under supervision of another qualified person

4.0 REFERENCES

4.1 SOURCE REFERENCES

The following is a list of references reviewed prior to the writing of this procedure

A Compendium of Superfund Field Operations Methods EPA/540/p-87/001 December 1987

Control and Disposition of Incidental Waters EG&G May 1990

Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA. Interim Final October 1988

RCRA Facility Investigation Guidance Interim Final May 1989

Rocky Flats Environmental Restoration Program Quality Control Plan. January 1989

The Environmental Survey Manual DOE/EH-0053 Volumes 1-4. August 1987.

4.2 INTERNAL REFERENCES

Related SOPs cross-referenced by this SOP are as follows

- SOP FO.3, General Equipment Decontamination
- SOP FO 7, Handling of Decontamination Water and Wash Water
- SOP FO 10, Receiving, Labeling, and Handling Environmental Materials Containers

- SOP FO 13, Containerizing, Preserving, Handling, and Shipping of Soil and Water Samples
- SOP SW 1, Surface Water Data Collection Activities
- SOP SW.3, Surface Water Sampling

5.0 METHODS

5.1 OVERVIEW

Incidental water sampling locations have not yet been specified, but recent surveys of RFP have identified 22 utility manholes and 10-14 building sumps and/or footing drains containing water. The report "Procedure for the Control and Disposition of Incidental Waters" also identifies various construction activities that will require collection and sampling of water. Locations will be designated by the RFP Surface Water Division representative as required

5.2 SAMPLE ANALYSES AND COLLECTION FREQUENCY

Analytical parameters and frequency of sample collection for most incidental water sources are specified within the "Procedure for the Control and Disposition of Incidental Waters" Routinely, analytes are limited to radiological parameters (gross alpha and beta), pH, specific conductance, and nitrate Samples are to be collected on an as needed basis and must meet applicable water quality criteria before being discharged to the ground or into storm drains. Building sumps and footing drains will routinely be sampled for the following parameters.

- Nitrate
- Total Dissolved Solids (TDS)
- HSL-Metals (Total)
- Gross Alpha and Gross Beta

- Tritium (H_3)
- pH, specific conductance, and temperature

Depending on data needed, additional parameters may be collected occasionally

5.3 SAMPLE CUSTODY, PRESERVATION, AND HANDLING

Whenever possible, laboratory-provided sample containers will be used to collect water quality samples Alternatively, the containers may be purchased from a supplier who certifies that bottles have been pre-cleaned to EPA specifications. Records certifying pre-cleaning will be kept for these containers.

Samples will be handled and preserved in accordance with SOP FO 13, Containerizing, Preserving, Handling, and Shipping of Soil and Water Samples

5.4 PROCEDURES

The methods that will be used to collect water from various incidental water sources are described in this section Methods vary from site to site but generally will involve manually collecting the sample by either container immersion, the "dip and transfer" method or by using a pump.

The preferred method for collecting a sample is to use the actual container which will be used to transport the sample to the laboratory This eliminates the possibility of contaminating the sample with an intermediate collection container The actual sample container will always be used for collection of samples for Oil and Grease (O&G) Procedures for sampling of O&G and volatile organic compounds (VOCs) are discussed in SOP SW.3, Surface Water Sampling.

Equipment and procedures for container immersion and for the use of sample transfer devices used in the "dip and transfer" method are discussed in SOP SW.3, Surface Water Sampling.

Remote sampling procedures may be required for some incidental waters. Refer to Section 5.3 4, Remote Sampling, of SOP SW.3, Surface Water Sampling for a description of sampling using extension rods or cables If a pump is used to collect a sample, all components of the pump that come in contact with the liquid must be properly decontaminated, prior to use, to ensure sample integrity

5.4.1 Sampling with a Peristaltic Pump

The peristaltic pump is highly versatile and portable The sample collection is conducted through essentially nonreactive material It is practical for a wide range of applications including streams, ponds, sumps, and hard to sample areas. Samples for oil and grease and volatile organic compounds will not be collected with a peristaltic pump This method is limited in use by the 8 meter lift capacity of the pump Sampling is as follows

- Select a length of suction-intake tubing necessary to reach the required sample depth, and attach it to the intake side of the pump
- Decontaminate the tubing as described in SOP FO.3, General Equipment Decontamination
- If possible, allow several liters of sample to pass through the tubing before actual sample collection
- Fill the required bottles by allowing the pump discharge to flow gently down the inside of the bottle with minimal turbulence

- Follow procedures set forth in SOP FO 13, Containerizing, Preserving, Handling, and Shipping of Soil and Water Samples.

- Decontaminate the tubing according to SOP FO.3, General Equipment Decontamination and also follow procedures in SOP FO.7, Handling of Decontamination Water and Wash Water.

6.0 DECONTAMINATION

Procedures for decontamination are set forth in the site-specific health and safety plan and SOP FO.3, General Equipment Decontamination, SOP FO 7, Handling of Decontamination Water and Wash Water, and SOP FO 10, Receiving, Labeling, and Handling Environmental Materials Containers

7.0 QUALITY ASSURANCE/QUALITY CONTROL

Quality assurance (QA) and quality control (QC) will be accomplished in accordance with SOP SW.3, Surface Water Sampling, Section 7 0, Quality Assurance/Quality Control Additional QA/QC requirements may be added if it is determined that they are needed to ensure the quality of the data

8.0 DOCUMENTATION

Information required by this SOP will be documented on the Surface Water Data Collection Field Notes form (Form SW 1A) included in SOP SW 1, Surface Water Data Collection Activities or in field logbooks